REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. Claims 1 - 36 are pending, of which claims 1, 6, 10, 11, 13, 15, 19, 24, 28 and 33 have been amended. The amendments to claims 1, 6, 10, 11, 13, 15, 19, 24, 28 and 33 are simply to provide clarification and/or to correct informalities noted by the Applicant, and are not to overcome prior art or any other objections. Support for the amendments can be found in the specification at least at page 9, paragraph [0025], page 13, paragraph [0034] and page 15, paragraph [0036].

The examiner in an interview on April 10, 2008 stated that the cited references do not show encoding bitstreams based on a HQRB. However, the examiner cited U.S. patent number 6,407,680 (Lai et al.) (hereinafter "Lai"), in Fig. 7 and columns 20 – 22, to show systems for transcoding media content based on the destination type. Applicant also will discuss in this response why Lai does not teach the claims as amended.

35 U.S.C. §103 Claim Rejections

A. Claims 1, 2, 4 – 11, 13 – 20, 22 – 29 and 31 - 36 are rejected under 35 U.S.C. §103(a) as being unpatentable over "An End to End Software Only Scalable Video Delivery System" (Chaddha et al.) (hereinafter, "Chaddha"), in view of U.S. Patent No. 5,687,095 (Haskell et al.) (hereinafter, "Haskell") (*Office Action* p.4).

B. Claims 3, 12, 21 and 30 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chaddha in view of Haskell and further in view of Wu et

al (hereinafter, "Wu") (*Office Action* p.6). Applicant respectfully traverses the rejections.

Amended Claim 1 recites:

A method comprising:

decoding an enhancement layer bitstream without decoding a base layer bitstream from encoded video data, the encoded video data having a base layer and one or more enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate);

determining data throughput characteristics of a network coupled to a client computing device;

calculating a new HQRB based on a difference between the data throughput characteristics of the network and a base layer bit rate; and

encoding the enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer for streaming to the client computing device with the not-decoded base layer bitstream. [Emphasis Added]

Chaddha and/or Haskell and/or Lai do not teach or suggest the combination of feature(s) recited in claim 1. For example, Chaddha and/or Haskell and/or Lai do not teach or suggest "calculating a new HQRB based on a difference between the data throughput characteristics of the network and a base layer bit rate", as recited in amended claim 1.

With respect to claim 1, the Examiner has stated:

> Regarding claim 1, Chaddha et al. receives an original 640 x 480 image, and decimates it to a 320 x 240 image, and further to a 160 x 120 image (§ 3.1). This corresponds with the claimed "decoding an enhancement layer bitstream". Note that throughout Chaddha et al., a 160 x 120 image is referred to as a "base layer", and a higher-resolution image is referred to as an "enhancement layer". A server delivering video over a network monitors the

network to determine the packet transmission rate and adjusts the quality of the video bitstream accordingly (§ 3.5), This corresponds with the claimed "determining data throughput characteristics" and "calculating a new HRQB based on the data throughput characteristics". To generate an enhancement layer bitstream, the base layer image is upsampled and subtracted from an original high-resolution image, and the error data is transmitted (§ 3.1). This corresponds with the claimed "encoding the enhancement layer bitstream". However, in Chaddha et al., a base layer must be completely decompressed, recompressed, and upsampled to generate an enhancement layer stream, but in the present invention, the base layer is not decoded.

Haskell et al. teaches a video transcoder. Regarding claim 1, whereas a typical conventional transcoder comprises little more than a video decoder with an output coupled to the input of a video encoder, in ask ell et al., a video multiplex decoder does not fully decode video, but instead leaves it in the frequency domain (column 4: lines 16-67). The DCT coefficients of a video are manipulated to match output video encoded by a subsequent video multiplex encoder to a target bit rate (column 5: lines 17-45). Methods for manipulating the frequency domain DCT video data include requantization or zeroing (column 5: lines 48-51). Since the video input into the transcoder is not decoded, this corresponds with the claimed omission of a decoding base layer video.

Chaddha et al. discloses the claimed invention except for not decoding a base layer in a transcoding process. Haskell et al. teaches that it was known to not fully decode video in a transcoder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate a frequency domain transcoder to the video delivery system of Chaddha et al., as taught by Haskell et al., since Haskell et al. states in column 2: lines 47-54 that such a modification would reduce the processing delay in a transcoder.

Examiner's Office Action, p. 4 - 5 (23 November 2007)

The portions of Chaddha describes receiving an original 640 x 480 image, and decimates it to a 320 x 240 image, and further to a 160 x 120 image (§ 3.1). Chaddha also describes a server delivering video over a network monitors the network to determine the packet transmission rate and adjusts the quality of the

image. However, Chaddha does not describe encoding video data according to a high quality reference bit-rate, or "calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate" as recited in amended claim 1.

Haskell describes teaches a video transcoder with a video multiplex decoder that does not fully decode video, but instead leaves it in the frequency domain (column 4: lines 16-67). In Haskell, the DCT coefficients of a video are manipulated to match output video encoded by a subsequent video multiplex encoder to a target bit rate. However, Haskell likewise does not describe calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate, as recited in amended claim 1.

Lai describes a system for transcoding media content from a source type to a destination type and "Depending on the bit-rate requirements and the nature of the data, different settings may be necessary in order to ensure the best picture quality." [Lai column 20, lines 51 – 53]. However, Lai does not describe calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate, as recited in amended claim 1.

Accordingly, amended claim 1 is allowable over the Chaddha-Haskell-Lai combination for at least the reasons described above, and Applicant respectfully requests that the §103 rejection be withdrawn.

Claims 2-9 are allowable by virtue of their dependency upon claim 1. Accordingly, the §103 rejection should be withdrawn. Additionally, some or all of

claims 2 - 9 are allowable over the Chaddha-Haskell-Lai combination for independent reasons. For example:

Amended Claim 6 recites:

> The method of claim 1, wherein the encoding further comprises:
>
> determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer; and
>
> encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device. [Emphasis added]

None of the portions cited in the references disclose "encoding the enhancement layer bitstream with the determined motion vectors" as recited in amended claim 6. Accordingly, amended claim 6 is allowable over the Chaddha-Haskell-Lai combination and the §103 rejection should be withdrawn.

Amended Claim 10 recites:

> A computer-readable medium encoded with computer-executable instructions that when executed by a processor implement operations comprising:
>
> (a) decoding an enhancement layer bitstream without decoding a base layer bitsteam from encoded video data, the encoded video data having a base layer and one or more enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate);
>
> (b) determining data throughput characteristics of a network coupled to a client computing device and changes to the data throughput characteristics of the network;
>
> (c) calculating a new HQRB based on the data throughput characteristics of the network and a base layer bit rate; and
>
> (d) encoding the enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer for streaming to the client computing device with the not decoded base layer bitstream; and

(e) repeating (b) – (d) in response to changes in throughput characteristics of the network. [Emphasis Added]

Chaddha and/or Haskell and/or Lai do not teach or suggest the combination of feature(s) recited in claim 10. For example, Chaddha and/or Haskell and/or Lai do not teach or suggest "determining data throughput characteristics of a network coupled to a client computing device and changes to the data throughput characteristics of the network", "calculating a new HQRB based on the data throughput characteristics of the network and a base layer bit rate" or "repeating (b) – (d) in response to changes in throughput characteristics of the network;" as recited in amended claim 10.

With respect to claim 10, the Examiner has stated: "Regarding claims 10, 19, and 28, Chaddha et al. is in a software format (§ 1)."

Examiner's Office Action, p. 5 (23 November 2007)

The portions of Chaddha describes receiving an original 640 x 480 image, and decimates it to a 320 x 240 image, and further to a 160 x 120 image. Chaddha also describes a server delivering video over a network monitors the network to determine the packet transmission rate and adjusts the quality of the image. However, Chaddha does not teach "determining data throughput characteristics of a network coupled to a client computing device and changes to the data throughput characteristics of the network", "calculating a new HQRB based on the data throughput characteristics of the network and the base layer bit rate", or "(e) repeating (b) – (d) in response to changes in throughput characteristics of the network" as recited in amended claim 10.

Haskell describes teaches a video transcoder with a video multiplex decoder that does not fully decode video, but instead leaves it in the frequency

domain (column 4: lines 16-67). In Haskell, the DCT coefficients of a video are manipulated to match output video encoded by a subsequent video multiplex encoder to a target bit rate. However, Haskell likewise does not describe determining data throughput characteristics of a network coupled to a client computing device and changes to the data throughput characteristics of the network, and calculating a new HQRB based the data throughput characteristics of the network and the base layer bit rate, as recited in amended claim 10.

Lai describes a system for transcoding media content from a source type to a destination type and "Depending on the bit-rate requirements and the nature of the data, different settings may be necessary in order to ensure the best picture quality." [Lai column 20, lines 51 – 53]. However, Lai does not describe does not describe "determining data throughput characteristics of a network coupled to a client computing device and changes to the data throughput characteristics of the network", or "calculating a new HQRB based on the data throughput characteristics of the network and the base layer bit rate", as recited in amended claim 10.

Accordingly, amended claim 10 is allowable over the Chaddha-Haskell-Lai combination for at least the reasons described above, and Applicant respectfully requests that the §103 rejection be withdrawn.

Claims 11-18 are allowable by virtue of their dependency upon claim 10. Accordingly, the §103 rejection should be withdrawn. Additionally, some or all of claims 11 - 18 are allowable over the Chaddha-Haskell-Lai combination for independent reasons. For example:

Amended Claim 15 recites:

The computer-readable medium of claim 10, wherein operations for encoding further comprise operations for determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer, and for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device.

[Emphasis added]

None of the portions cited in the references disclose "encoding the enhancement layer bitstream with the determined motion vectors" as recited in amended claim 15. Accordingly, amended claim 15 is allowable over the Chaddha-Haskell-Lai combination and the §103 rejection should be withdrawn.

Amended Claim 19 recites:

A computing device comprising a processor coupled to a memory, the memory being encoded with computer-program instructions executable by the processor to implement operations comprise:

decoding an enhancement-layer bitstream from encoded video data, the encoded video data having a base layer and one or more enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate);

determining data throughput characteristics of a network coupled to a client computing device;

calculating a new HQRB based on a difference between the data throughput characteristics of the network and a bit rate of the base layer; and

encoding the enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer for streaming to the client computing device; and

wherein the base layer is not decoded for streaming to the client computing device. [Emphasis Added]

Chaddha and/or Haskell and/or Lai do not teach or suggest the combination of feature(s) recited in claim 19. For example, Chaddha and/or Haskell and/or Lai do not teach or suggest "calculating a new HQRB based on a difference between the data throughput characteristics of the network and a base layer bit rate" as recited in amended claim 19.

With respect to claim 19, the Examiner has stated: "Regarding claims 10, 19, and 28, Chaddha et al. is in a software format (§1)."

Examiner's Office Action, p. 5 (23 November 2007)

The portions of Chaddha describes receiving an original 640 x 480 image, and decimates it to a 320 x 240 image, and further to a 160 x 120 image. Chaddha also describes a server delivering video over a network monitors the network to determine the packet transmission rate and adjusts the quality of the image. However, Chaddha does not teach "calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate as recited in amended claim 19.

Haskell describes teaches a video transcoder with a video multiplex decoder that does not fully decode video, but instead leaves it in the frequency domain (column 4: lines 16-67). In Haskell, the DCT coefficients of a video are manipulated to match output video encoded by a subsequent video multiplex encoder to a target bit rate. However, Haskell likewise does not describe calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate, as recited in amended claim 19.

Lai describes a system for transcoding media content from a source type to a destination type and "Depending on the bit-rate requirements and the nature of the data, different settings may be necessary in order to ensure the best picture quality." [Lai column 20, lines 51 – 53]. However, Lai does not describe "calculating a new HQRB based on the difference between the data throughput characteristics of the network and the base layer bit rate", as recited in amended claim 19.

Accordingly, amended claim 19 is allowable over the Chaddha-Haskell-Lai combination for at least the reasons described above, and Applicant respectfully requests that the §103 rejection be withdrawn.

Claims 20-27 are allowable by virtue of their dependency upon claim 19. Accordingly, the §103 rejection should be withdrawn. Additionally, some or all of claims 20 - 27 are allowable over the Chaddha-Haskell-Lai combination for independent reasons. For example:

Amended Claim 24 recites:

> The computing device of claim 19, wherein the operations for encoding further comprise operations for determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer; and operations for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device. [Emphasis added]

None of the portions cited in the references disclose "encoding the enhancement layer bitstream with the determined motion vectors" as recited in

amended claim 24. Accordingly, amended claim 24 is allowable over the Chaddha-Haskell-Lai combination and the §103 rejection should be withdrawn.

Amended Claim 28 recites:

> A computing device comprising processing means in a tangible computer-readable medium, the processing means comprising:
>
> means for decoding an enhancement layer bitstream from encoded video data without decoding a base layer bitstream from the encoded video data, the encoded video data having a base layer and one or more enhancement layers, the video data having been encoded according to a high HQRB (high quality reference bit-rate);
>
> means for determining data throughput characteristics of a network coupled to a client computing device;
>
> means for calculating a new HQRB based on a difference between the data throughput characteristics of the network and a base layer bit rate; and
>
> means for encoding the enhancement layer bitstream based on the new HQRB to generate a transcoded enhancement layer for streaming to the client computing device with the base layer bitstream. [Emphasis Added]

Chaddha and/or Haskell and/or Lai do not teach or suggest the combination of feature(s) recited in claim 28. For example, Chaddha and/or Haskell and/or Lai do not teach or suggest "means for calculating a new HQRB based on a difference between the data throughput characteristics of the network and a base layer bit rate" as recited in amended claim 28.

With respect to claim 28, the Examiner has stated: "Regarding claims 10, 19, and 28, Chaddha et al. is in a software format (§1)."

Examiner's Office Action, p. 5 (23 November 2007)

The portions of Chaddha describes receiving an original 640 x 480 image, and decimates it to a 320 x 240 image, and further to a 160 x 120 image. Chaddha also describes a server delivering video over a network monitors the network to determine the packet transmission rate and adjusts the quality of the image. However, Chaddha does not teach "means for calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate" as recited in amended claim 28.

Haskell describes teaches a video transcoder with a video multiplex decoder that does not fully decode video, but instead leaves it in the frequency domain (column 4: lines 16-67). In Haskell, the DCT coefficients of a video are manipulated to match output video encoded by a subsequent video multiplex encoder to a target bit rate. However, Haskell likewise does not describe "means for calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate" as recited in amended claim 28.

Lai describes a system for transcoding media content from a source type to a destination type and "Depending on the bit-rate requirements and the nature of the data, different settings may be necessary in order to ensure the best picture quality." [Lai column 20, lines 51 – 53]. However, Lai does not describe "means for calculating a new HQRB based on a difference between the data throughput characteristics of the network and the base layer bit rate", as recited in amended claim 28.

Accordingly, amended claim 28 is allowable over the Chaddha-Haskell-Lai combination for at least the reasons described above, and Applicant respectfully requests that the §103 rejection be withdrawn.

Claims 29-36 are allowable by virtue of their dependency upon claim 28. Accordingly, the §103 rejection should be withdrawn. Additionally, some or all of claims 29 - 36 are allowable over the Chaddha-Haskell-Lai combination for independent reasons. For example:

Amended Claim 33 recites:

> The computing device of claim 28, wherein the means for encoding comprises:
>
> means for determining motion vector(s) from the base layer without decoding an entirety of a bitstream corresponding to the base-layer; and
>
> means for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device. [Emphasis added]

None of the portions cited in the references disclose "means for encoding the enhancement layer bitstream with the determined motion vector(s) to generate the transcoded enhancement layer for streaming to the client computing device" as recited in amended claim 33. Accordingly, amended claim 33 is allowable over the Chaddha-Haskell-Lai combination and the §103 rejection should be withdrawn.

Conclusion

Pending claims 1 - 36 are in condition for allowance and Applicant respectfully requests issuance of the subject application. If any issues remain that preclude issuance of the application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.

Respectfully Submitted,

Dated: 4/23/09 By: _____

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